

(Translation)

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[NAME OF DOCUMENT] SPECIFICATION

[TITLE OF THE INVENTION] TELEVISION RECEIVER

[SCOPE OF CLAIMS FOR PATENT]

[Claim 1] A television receiver for selecting and receiving television broadcast of a plurality of programs; the television receiver comprising:

a program registering means for corresponding arbitrary program identification information and channel information representing one program of the television broadcasts, and storing plurality of program identification information in a memory part; and

a program selecting means for displaying the plurality of program identification information stored in the memory part, and selecting one of the plurality of program identification information to select a program of a television broadcast to be received.

[DETAILED DESCRIPTION OF THE INVENTION]

The present invention will be described in the following order.

A. Technical Field of the Invention

B. Outline of the Invention

C. Prior Art

D. Problems to be Solved by the Invention

E. Means for Solving the Problems (Fig. 1 to Fig. 13)

F. Effect (Fig. 1 to Fig. 13)

G. Embodiments

(G1) Configuration of embodiment (Fig. 1 to Fig. 13)

(G2) Program registering process (Fig. 1 and Fig. 2, Fig. 4 to Fig. 12)

(G3) Channel selecting process (Fig. 1, Fig. 3, Fig. 4, and Fig. 13)

(G4) Effect of Embodiment

H. Effect of the Invention

A. Technical Field of the Invention

The present invention suited for application in television receivers such as a television receiver for

receiving satellite broadcast to receive a great number of broadcast waves is proposed.

B. Outline of the Invention

The present invention allows a desired program to be selected from a great number of television broadcasts by storing channel information corresponding to the program desired by the user with arbitrary program identification information in advance, displaying a plurality of registered program identification information on a screen when selecting a channel, and selecting one desired program identification information.

C. Prior Art

Conventionally, in satellite broadcasting of C band in the United States, for example, a plurality of satellites respectively relays television broadcast of a few to a few dozen channels, and television broadcast of around one hundred channels is constantly being broadcasted for the entire satellite broadcast.

In the television receiver for receiving satellite broadcast, a method of channel selecting the television broadcast in the following procedure has been proposed.

When the user attempts to receive the satellite broadcast, a list of registered satellites is displayed on the display screen, and the satellite relaying the desired television broadcast is specified using a satellite number or a satellite name.

The satellite is specified by pushing the number such as the satellite number etc. of the desired satellite on the screen using ten key and the like.

In this state, the television receiver is able to receive the desired television broadcast by specifying the channel number in the relevant satellite by ten key and the like.

D. Problems to be Solved by the Invention

It is troublesome in the prior art described above, however, in that the key operation of specifying the satellite relaying the desired television broadcast and the key operation of selecting the channel number in the satellite need to be repeated every time the user receives the satellite broadcast.

In order to alleviate such trouble, consideration is first made in sequentially switching the selecting channel by a set of up/down key in place of a keyboard of ten key

configuration, but in this case, the desired channel number cannot be directly input. Secondly, consideration is made in using a so-called direct key in which all the necessary channel numbers are arranged on the keyboard, but in this case, the keyboard becomes complex.

Furthermore, when particularly attempting to channel select the desired television broadcast from the television broadcasts having a great number of channel numbers of around one hundred channels for the entire satellite broadcast, an information magazine such as television broadcast guidebook needs to be prepared, and it is thus still not sufficient in terms of convenience for the user.

In view of the above aspects, the present invention proposes a television receiver that resolves all the troubles in the channel selecting operation of the prior art.

E. Means for Solving the Problems

In the invention for solving the above problems, there is provided a television receiver for selecting and receiving television broadcasts of a plurality of programs; the television receiver including a program registering means SP1 for corresponding arbitrary program identification information and channel information representing one program of the television broadcasts, and storing the plurality of program identification information in a memory part 13; and a program selecting means SP20 for displaying the plurality of program identification information stored in the memory part 13, and selecting one of the plurality of program identification information to select a program of a television broadcast to be received.

F. Effect

According to the program registering means SP1, the arbitrary program identification information and the channel information of the program are registered in correspondence to each other, and furthermore, the program identification information registered by the program selecting means SP20 is displayed, so that the program of the television broadcast can be selected by the program identification information.

Therefore, the user does not need to always remember the correspondence of the program and the channel information when channel selecting the program, thereby significantly enhancing

the convenience for the user.

G. Embodiments

One embodiment of a television receiver according to the present invention will be described in detail with reference to the drawings.

(G1) Configuration of embodiment

In Fig. 1, 1 is a television receiver for receiving satellite broadcast as a whole.

The television receiver 1 converts the receiving wave received with a parabola antenna 2 to a first intermediate frequency through a down converter (not shown), guides the same to a selecting part 3 arranged indoor, channel selects the television broadcast selected by a user and converts the same to a reception signal of a second intermediate frequency in the selecting part 3. The reception signal is FM detected by a detecting part 4, and an image signal 9 is obtained through a de-emphasis circuit 5, an amplification part 6, and an output part 8.

The television receiving part 1A is configured similar to the conventional television receiver, but the television receiver 1 of Fig. 1 additionally includes a channel control part 1B including a control part 11 of microcomputer configuration, a keyboard 12 having a key arrangement shown in Fig. 4, a memory part 13 storing channel information, various data of satellite, and image data shown in Fig. 5 to Fig. 13, and a character generator 10 for forming a display screen based on specification from the control part 11.

The control part 11 analyzes an instruction from the keyboard 12, and executes a channel registering processing program SP1 or a channel selecting processing program SP20 in Fig. 2 and Fig. 3 based thereon.

Based on the data stored in the memory part 13, the control part 11 provides the image data shown in Fig. 5 to Fig. 13 to an adder 7 of the television receiving part 1A via the character generator 10 to superimpose the same on the image signal and display on a CRT (not shown), and transmits an antenna control signal CNT_{ANT} and a channel control signal CNT_{CH} to the antenna control part and/or selecting part 3 based on the processing result of the respective processing programs SP1 and SP20.

The antenna control signal CNT_{ANT} instructs dish

adjustment for correctly directing a receiving surface 2A of the antenna 2 towards the satellite and polarizer correction for correcting polarized wave characteristics of each satellite to the antenna control part 2B.

The channel control signal CNT_{CH} instructs tuning information specified by the user to the selecting part 3 through the keyboard 12.

In the above configurations, the television receiver 1 is configured to tune and receive the broadcasting waves for 100 channels, and particularly, regarding the predetermined channel (referred to as specific channel) which matches the user's preference of the receivable channels, the tuning information can be pre-registered.

In the case of this example, as a specific channel, for example as the tuning information for channel 10 which for example, has a higher tuning using frequency, the program identification information (for example, represented using alphabetical letters for broadcast names such as MTV, CNN and the like, and shortened names and the like arbitrarily selected by the user such as PAPA, MAMA and the like) and the specific channel information representing the satellite number and the channel numbers in the satellite are registered.

The program identification information for channel 10 registered in such way and a list of channel information (called the specific channel list) are displayed on the display screen with the index number by the user's instruction. By selecting and designating one of the displayed index numbers, the television broadcast may be tuned.

(G2) Program registering process

First, when the user attempts to register the program of the desired channel and pushes a "STORE" key of the keyboard 12 shown in Fig. 4, the control part 11 mutes the reception of the television broadcast, reads a menu screen DSP1 (showing all the processing items that can be processed by the control part 11) shown in Fig. 5 from the memory part 3 and displays the same on the display screen prior to the registering procedure.

Herein, the user selects the index number "1" added to the identification display "TOP 10" which represents a registration processing procedure of the program of the menu display DSP 1 and designates by a key board 12. Then the "ENTER"

key is pressed. At this time, the control part 11 initiates the program registration processing program SP1 shown in Fig. 2.

In Step SP2, the control part 11 reads the program registration screen (1) DSP2 shown in Fig. 6 from the memory part 13 to display it on CRT. At this time, on the program registration screen (1) DSP2, the specific channel list which is already registered is displayed, and the index number "3" representing the program identification information which is already selected in the current selecting part 3 is inverse-displayed (so-called outlined display).

Moreover, the program identification information contained in the specific channel list is initially registered at the time of the factory delivery.

In the following Steps SP3 and SP4, the control part 11 waits for the designation and input of the index number which is to be registered at this time based on the program registration screen (1) DSP2 displayed on the display screen and the pressing of the "ENTER" key. When the key of the index number "2" to be program registered at the current time and the "ENTER" key are pushed, the control part 11 inverse-displays the index number "2" to be registered in step SP5 and flash displays the letter position "T" to be reregistered first out of the program identification information "TSN" of the relevant index number "2" (Fig. 7), and proceeds to the following step SP6.

Step SP6 is a step of registering the letter information that is being flash displayed in the memory part 13, where the content of the letter ("A" to "Z") is selected using the "+" or "-" key on the keyboard 12 (Fig. 4), and the position of the letter to be changed (i.e., position of flashing letter) is selected using "←" or "→" key, so that the letter information is reregistered one letter at a time.

When changing the program identification information "TSN" shown in the index number "2" of the program registering screen (2) DSP 3 (Fig. 7) to the new program identification information "ABC", the currently flash displayed letter "T" is first changed to letter "A", and thus "-" key is continuously pushed. The flash display sequentially changes the alphabet as "T" → "S" → "R" → "Q" → ... in reverse order, and the "-" key

is released when the target letter "A" is displayed to select the target letter "A" (Fig. 8).

If "+" key is pushed, the alphabet is changed as "T" → "U" → "V" → ... in normal order.

Subsequently, the "→" key is pushed once to flash display the next letter "S", which is changed to a predefined letter "B" using "+" or "-" key similar to the above case, and the next letter "N" is changed to a predefined letter "C" similar to the above. After checking the display (program registering screen (3) DSP 4 (Fig. 8)) of the program identification information "ABC" to be changed on the predetermined display screen, the "ENTER" key is pushed, and the control part 11 executes step SP7 and proceeds to step SP8.

In step SP8, the satellite selecting screen (1) DSP 5 is read out from the memory part 13, and displayed on the display screen including the program identification information "ABC" input in step SP6 (Fig. 9).

In the satellite selecting screen (1) DSP 5, the abbreviation of the registered satellites are shown in a list, and the index number "5" indicating the satellite "F3" corresponding to the currently receiving program identification information is inverse-displayed.

If the satellite selected to correspond to the program identification information "ABC" newly input by the user is "W2", the index number "15" is inverted-displayed when the index number "15" is input by the keyboard 12 (satellite selecting screen (2) DSP 6 (Fig. 10)).

When the user then inputs "ENTER" key, the control part 11 executes steps SP9 and SP10, transmits the antenna control signal CNT_{ANT} for correctly directing the antenna receiving surface 2A towards the specified satellite "W2" to the antenna control part 2B in step SP11, and reads out the satellite search screen DSP 7 (Fig. 11) from the memory part 13 and displays the same on the CRT.

After adjustment of the antenna 2 with respect to the satellite specified in step SP11 is terminated, the control part 11 reads out the in-satellite channel number input screen DSP 8 (Fig. 12) from the memory part 13 and displays the same on the display screen. The program identification information "ABC" and the abbreviation name "W2" of the satellite selected

in step SP6 and step SP9 are displayed as the program identification information and the abbreviation name of the satellite, and the channel number that was being received immediately before ("14" in this embodiment) is displayed.

The user then inputs the channel number "12" in the satellite "W2" to correspond to the program identification information "ABC", and pushes "STORE" key indicating the termination of program registering process, so that the control part 11 updates the channel number in the in-satellite channel number input screen DSP 8, and transmits the channel control signal CNT_{CH} to the selecting part 3 in the following step SP15. In the subsequent step SP16, the control part 11 erases the in-satellite channel number input screen DSP8, and cancels the mute of the television receiving wave. By such serial processes, the television broadcast of the channel corresponding to the tuned program identification information "ABC" (satellite name "W2", channel number in satellite "12") is displayed on the display screen, and in Step SP17, the data of the updated specific channel list is written in the memory part 13, and in Step S18, the program ends.

(G3) Tuning process

Next, the user tunes the desired program from the special channel list registered in the memory part 13 by pressing the "PROGRAM" key (Figure 4).

That is, when the "PROGRAM" key is pushed by the user, the control part 11 executes the channel selecting program SP20, and mutes the reception of the television broadcast, reads out a program selecting screen DSP 9 (Fig. 13) from the memory part 13 and displays the same on the display screen in SP21. In the program selecting screen DSP9, the index number "3" corresponding to the program identification information "FNN" that was being received until immediately before is inverse-displayed.

When the user attempts to channel select the television broadcast of the channel corresponding to the program identification information "ABC" registered through the program registering procedure described above, the "ENTER" key is pushed after the index number "2" is inputted by the keyboard 12.

In this case, the control part 11 executes steps SP22 and

SP23, and thereafter, reads out the satellite name (= "W2") corresponding to the program identification information "ABC" of the index number "2" and the channel number (= "12") in the satellite from the memory part 13, and transmits the antenna control signal CNT_{ANT} and the channel control signal CNT_{CH} to the antenna control part 2B and the selecting part 3 in the following steps SP24 and SP25.

The television receiver 1 then performs a so-called dish adjustment of directing the receiving surface 2A of the antenna 2 towards the relevant satellite and a so-called polarizer operation of shift correcting the polarized wave surface for every satellite, to obtain a reception preparation state of the television broadcast relayed by the satellite.

The control part 11 also erases the display of the channel selecting screen DSP 9, cancels the mute of the television receiving wave, and starts receiving the television broadcast of the relevant channel.

In the following step SP26, the control part 11 writes the channel information selected in steps SP24 and SP25 to a last memory in which content is not erased even if a main power supply is cut due to a backup power supply, and terminates the channel selecting program in step SP27.

(G4) Effects of the Example

According to the aforementioned configuration, in addition to the normal channel selecting means, by the user pre-selecting a specific channel, for example, a television broadcast of the channel with a high viewer frequency, and registering by matching it with any program identification information, regarding the television broadcast of the channel with a high viewer frequency, tuning with a simple operation using any registered program identification information may be operated, where the user's convenience is significantly improved.

In the embodiment described above, the channel number and the numbers in selecting the satellite are input using a keyboard of ten key configuration, but the input of numbers is not limited thereto, and similar effects are obtained by inputting the numbers with a rotary method using an up/down key, or arranging all the necessary numbers so that an arbitrary number can be directly input.

SHUSAKU YAMAMOTO

In the embodiment described above, an input means for inputting the program identification information arbitrarily includes selectively inputting the information using "+", "- " and "←", "→" keys, but in place thereof, the information may be directly input using a keyboard for inputting alphabets.

The program identification information is not limited to alphabetical letters, and may be numbers, symbols, graphics, other characters, and the like, and Japanese letters may be used by arranging a Japanese letter input means to the control part as necessary.

In the embodiment described above, the length of the program identification information and the number of program identification information that can be registered and displayed are formed to be three letters as shown in Fig. 6 due to restrictions etc. of the memory part and the display screen, but the length of the relevant identification information and the number of letter information that can be registered and displayed are not limited thereto, and similar effects can still be obtained by being modified as necessary.

In the embodiment described above, one example of applying the present invention to a television receiver for receiving satellite broadcast has been described, but the present invention is not limited thereto, and can be widely applied to television receivers capable of selecting teletext broadcasting as one television broadcast, television receivers for receiving cable TV containing a great number of channels, and the like.

H. Effect of the Invention

According to the invention described above, in addition to the normal channel selecting means, a program registering means for the user to register arbitrary program identification information and television broadcast channel in correspondence to each other, and a program selecting means for selecting the registered television broadcast with the program identification information are arranged, so that the user can select the desired program of the television broadcast with the registered program identification information thereby realizing a television receiver that is significantly more convenient for the user.

[Brief Description of Drawings]

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Fig. 1 is a block diagram showing one embodiment of a television receiver according to the present invention;

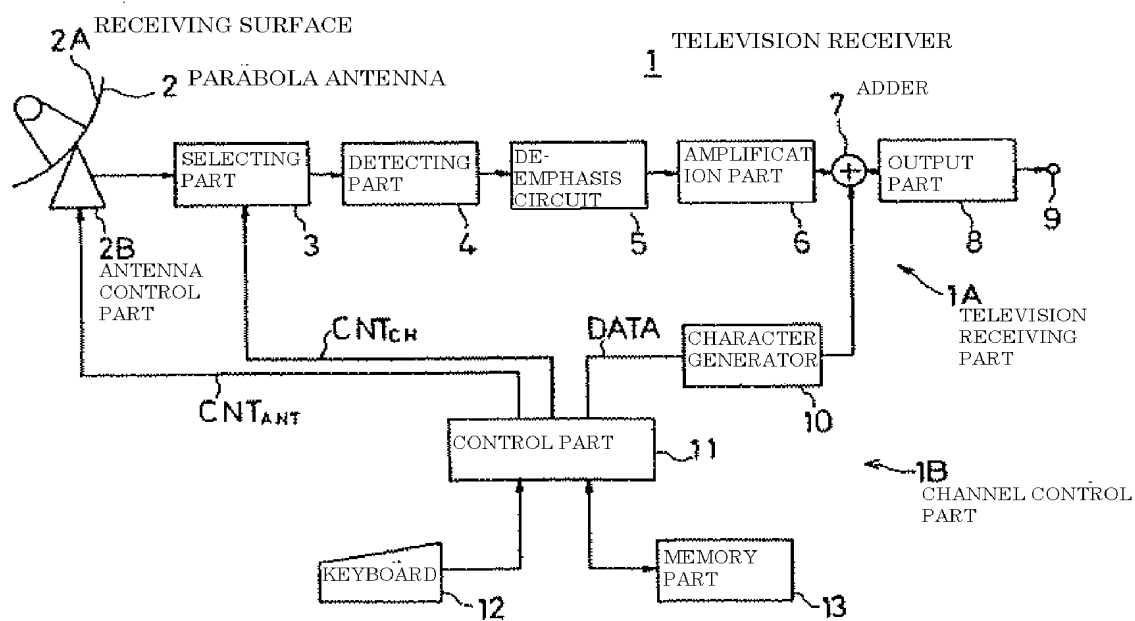
Fig. 2 and Fig. 3 are flowcharts showing a processing program of a control part;

Fig. 4 is a schematic view showing an arrangement of a keyboard; and

Fig. 5 to Fig. 13 are schematic views showing a screen displayed on a CRT by the control part.

[Description of the Reference Numerals]

- 1 Television receiver
- 2 Parabola antenna
- 3 Selecting part
- 4 Detecting part
- 5 De-emphasis circuit
- 6 Amplification part
- 7 Adder
- 8 Output part
- 10 Character generator
- 11 Control part
- 12 Keyboard
- 13 Memory part



CONFIGURATION OF EMBODIMENT

Fig.1

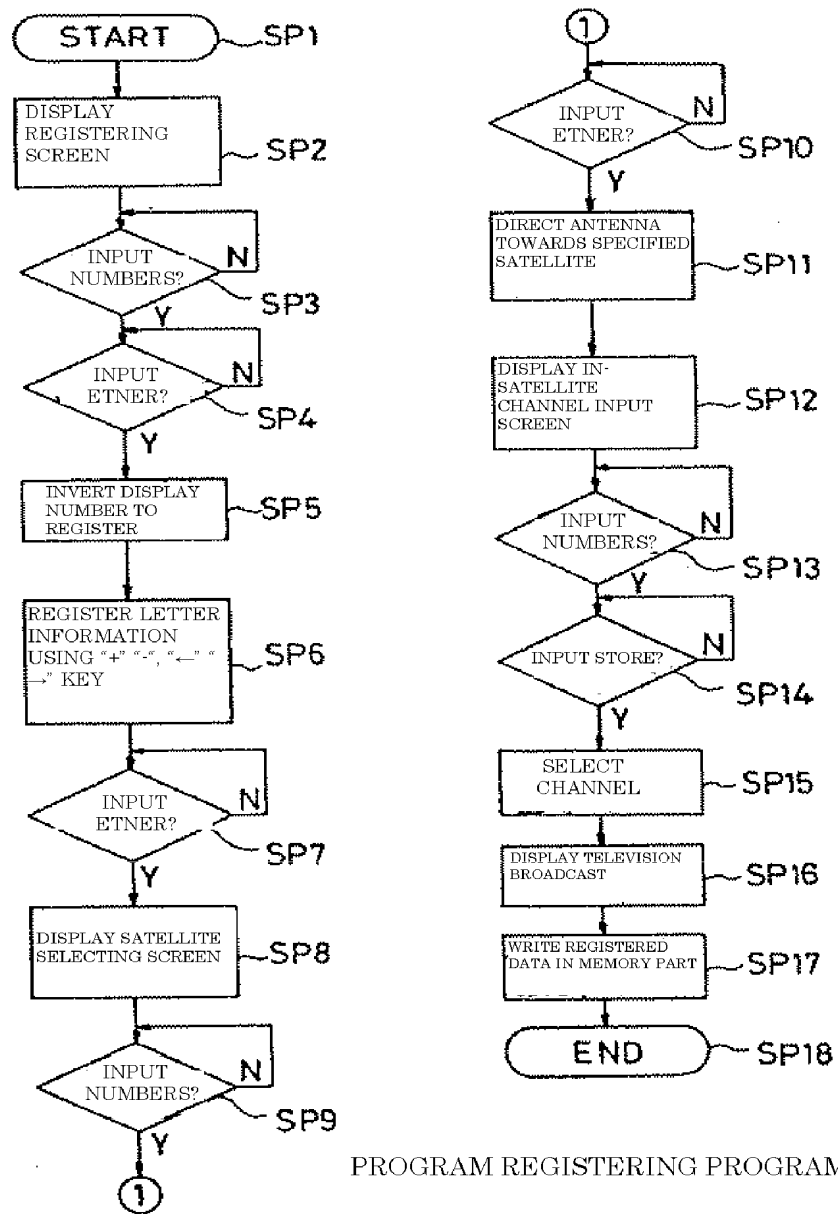
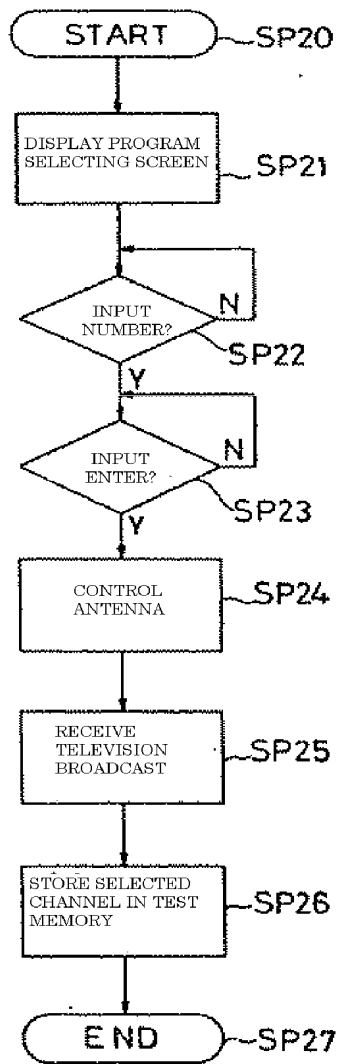
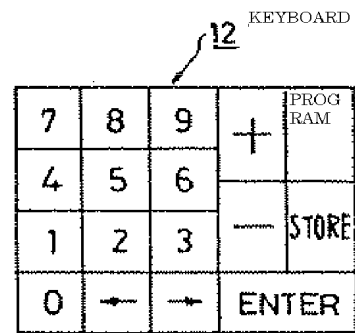


Fig.2



PROGRAM SELECTING PROGRAM

Fig.3



KEY ARRANGEMENT

Fig.4

MENU	
1. TOP10	2. SAT 20
3. ID CODE	4. CH SKIP
5. DISH	6. POLARITY
7. V-FREQ	8. A-FREQ
SELECT NO. == (ENTER) (STORE) : TO RETURN	

~DSP1

MENU SCREEN

Fig.5

TOP10 CHANGE: PROG	
1. MTV	2. TSN
<input checked="" type="checkbox"/> 3. FNN	4. TCT
5. SPN	6. PTL
7. HBO	8. TMC
9. CBS	10. PPV
SELECT NO. == (ENTER)	

~DSP2

PROGRAM REGISTERING SCREEN (1)

Fig.6

TOP10 CHANGE: PROG	
1. MTV	<input checked="" type="checkbox"/> 2. TSN
3. FNN	4. TCT
5. SPN	6. PTL
7. HBO	8. TMC
9. CBS	10. PPV
PRESS +, -, →, ← (ENTER)	

~DSP3

PROGRAM REGISTERING SCREEN (2)

Fig.7

TOP10 CHANGE: PROG	
1. MTV	<input checked="" type="checkbox"/> 2. ABC
3. FNN	4. TCT
5. SPN	6. PTL
7. HBO	8. TMC
9. CBS	10. PPV
PRESS +, -, →, ← (ENTER)	

~DSP4

PROGRAM REGISTERING SCREEN (3)

Fig.8

ABC: WHICH SAT			
1. G1	2. G2	3. F1	4. F2
<input checked="" type="checkbox"/> 5. F3	6. S1	7. S2	8. S3
9. D4	10. W5	11. AB	12. T1
13. W4	14. T2	15. W2	16. AD
17. *	18. *	19. *	20. *
SELECT NO. == (ENTER)			

~DSP5

SATELLITE SELECTING SCREEN (1)

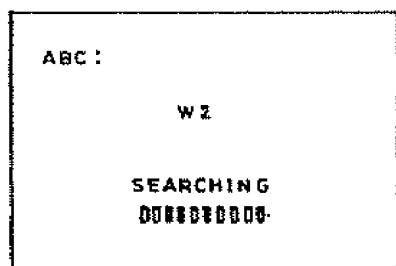
Fig.9

ABC: WHICH SAT			
1. G1	2. G2	3. F1	4. F2
5. F3	6. S1	7. S2	8. S3
9. D4	10. W1	11. AB	12. T1
13. W4	14. T2	<input checked="" type="checkbox"/> 15. W2	16. AD
17. *	18. *	19. *	20. *
SELECT NO. 15 (ENTER)			

~DSP6

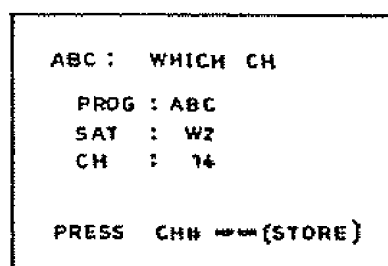
SATELLITE SELECTING SCREEN (2)

Fig.10



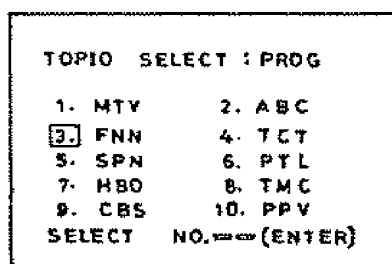
SATELLITE SEARCH SCREEN

Fig.11



IN-SATELLITE CHANNEL NUMBER INPUT SCREEN

Fig.12



PROGRAM SELECTING SCREEN

Fig.13